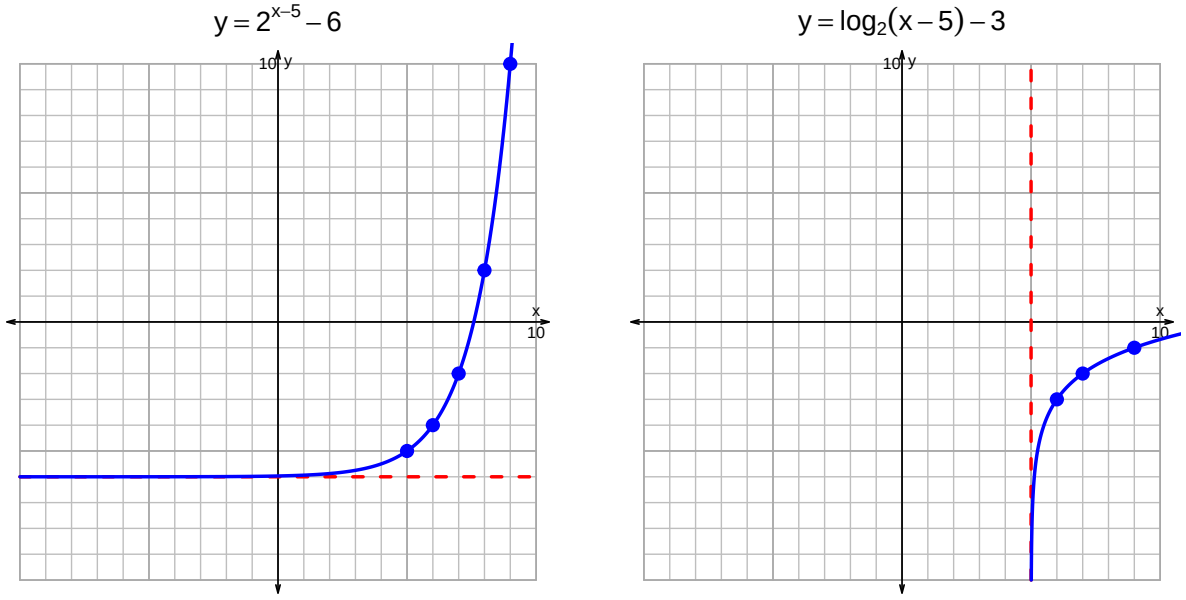
Name: Date:

s18quiz: EXP LOG (Solution v144)

1. Graph $y = 2^{x-5} - 6$ and $y = \log_2(x-5) - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-4}{5}\right) \cdot 2^{-3t/7}$$

Divide both sides by $\frac{-4}{5}$.

$$\frac{19 \cdot 5}{4} = 2^{-3t/7}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 5}{4}\right) = \frac{-3t}{7}$$

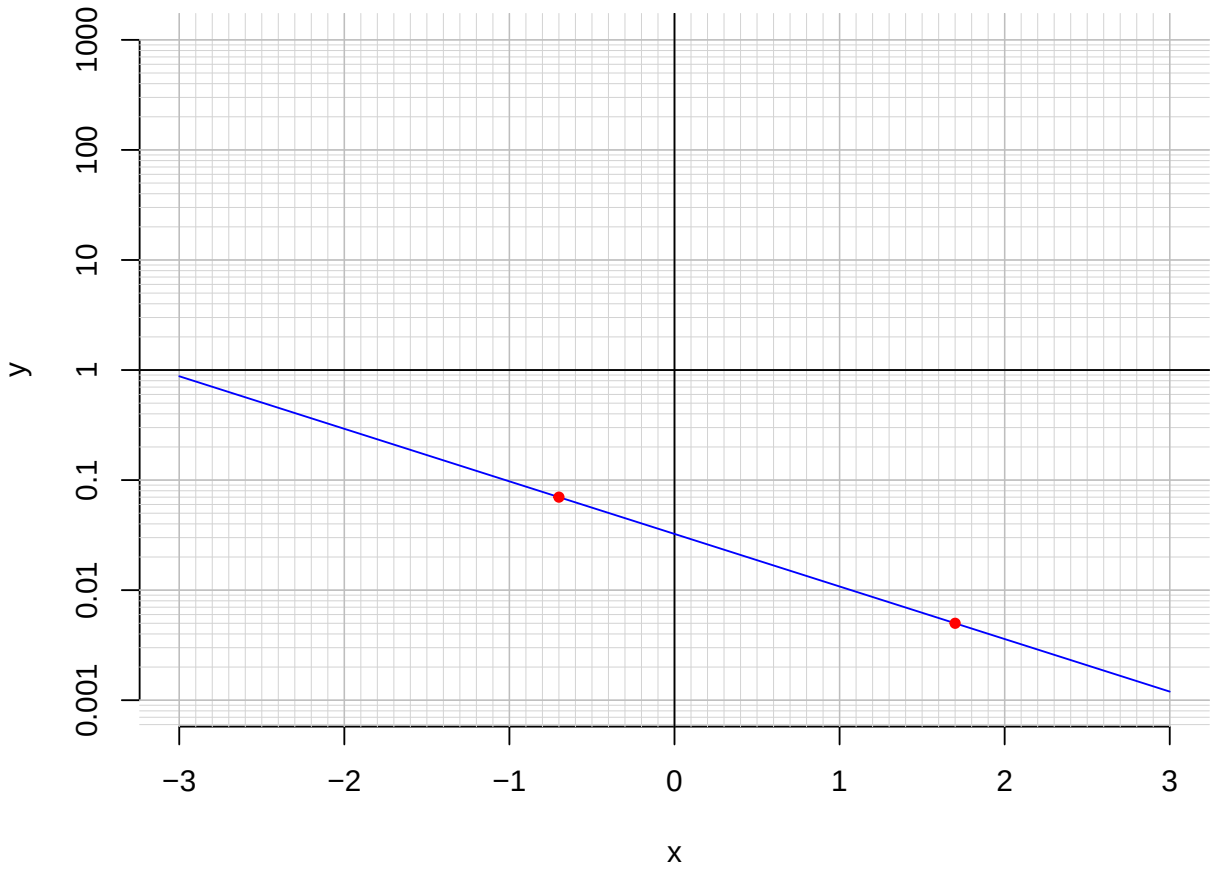
Divide both sides by $\frac{-3}{7}$.

$$\frac{-7}{3} \cdot \log_2\left(\frac{19 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{-7}{3} \cdot \log_2\left(\frac{19 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 0.0324 \cdot e^{-1.1x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.7)$.

$$f(1.7) = 0.005$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.1} \cdot \ln\left(\frac{x}{0.0324}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.07)$.

$$f^{-1}(0.07) = -0.7$$